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ABSTRACT

Explaining the use of overlay methodology in the assessment of rural social service this paper describes a technique of visual juxtaposition wherein information is matched with geographic location. To ascertain whether senior citizen centers are located in areas of client concentration, for example, this model superimposes the location of senior citizen centers on the actual distribution of persons aged 65 and over. Presenting an example of the overlay technique as applied to a national study of quality of life involving nine indexes, this paper includes graphic illustrations of the technique. A further example of this technique as applied to a rural development project in Clinton County, New York is presented to illustrate the way in which four major phases of investigation (census and background data, crossroads survey, key informant survey, and general sample survey) can be compared via the overlay method. On the basis of the work presented in this paper, the following recommendations for assessing rural service needs are made: (1) assemble all pertinent census and secondary data; (2) map the data by geographic location; (3) conduct a windshield survey to identify actual locations of services; (4) interview key informants about where local residents go for services and what particular services are needed; (5) assemble all the data on overlay maps and present to local decision makers. (JC)

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QUALITY OF LIFE ASSESSMENT

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Quality of Life Assessment

The Problem

The delivery of services in rural areas has always been difficult. Widely scattered resources, often in inadequate amounts, are usually spottily available over large distances. In the past, cities have offered many more services, but now even their resources are taxed and people have begun to look to rural areas again as viable places to live and work. The problem then is how best to assess the service needs of people in rural areas, and then to design programs to meet the needs in an equitable and efficient manner.

It must be noted here that the author considers "services" very broadly, from such commercial enterprises as gas stations and grocery stores to transportation to health and social services. It could be argued that the provision of many of these services can be related directly to market economics, but for some facilities which society subsidizes, a method must be provided for assessing need and prescribing locations. In addition, it may be that some services, such as health care, are so necessary that location by pure market viability is not desirable.

This paper will explain the development of a technique of assessing the major dimensions of access to services and amenities in rural counties.

Methodology

Although quantities of data may be available about a a state or county or even a township, it is often difficult to put this information into perspective and particularly to make judgements about the best use of scarce resources among competing localities. One way to make such information more assimilable and useful to local leaders and planners is to match the information with geographic areas. To be more specific, in Figure 1 the population of each township has been entered proportionally on the map. In similar fashion other characteristics such as age groups, poverty information, housing standards, etc. can be added either as individual overlays, or transparencies, or in composite form. A final step in putting this information to use in program planning is to add the actual resources that are available. For example, in Figure 2 the location of senior citizens centers is superimposed on the actual distribution of persons aged 65 and over. This visual juxtaposition makes it possible to see readily whether the centers are located in areas where the most clients are concentrated.

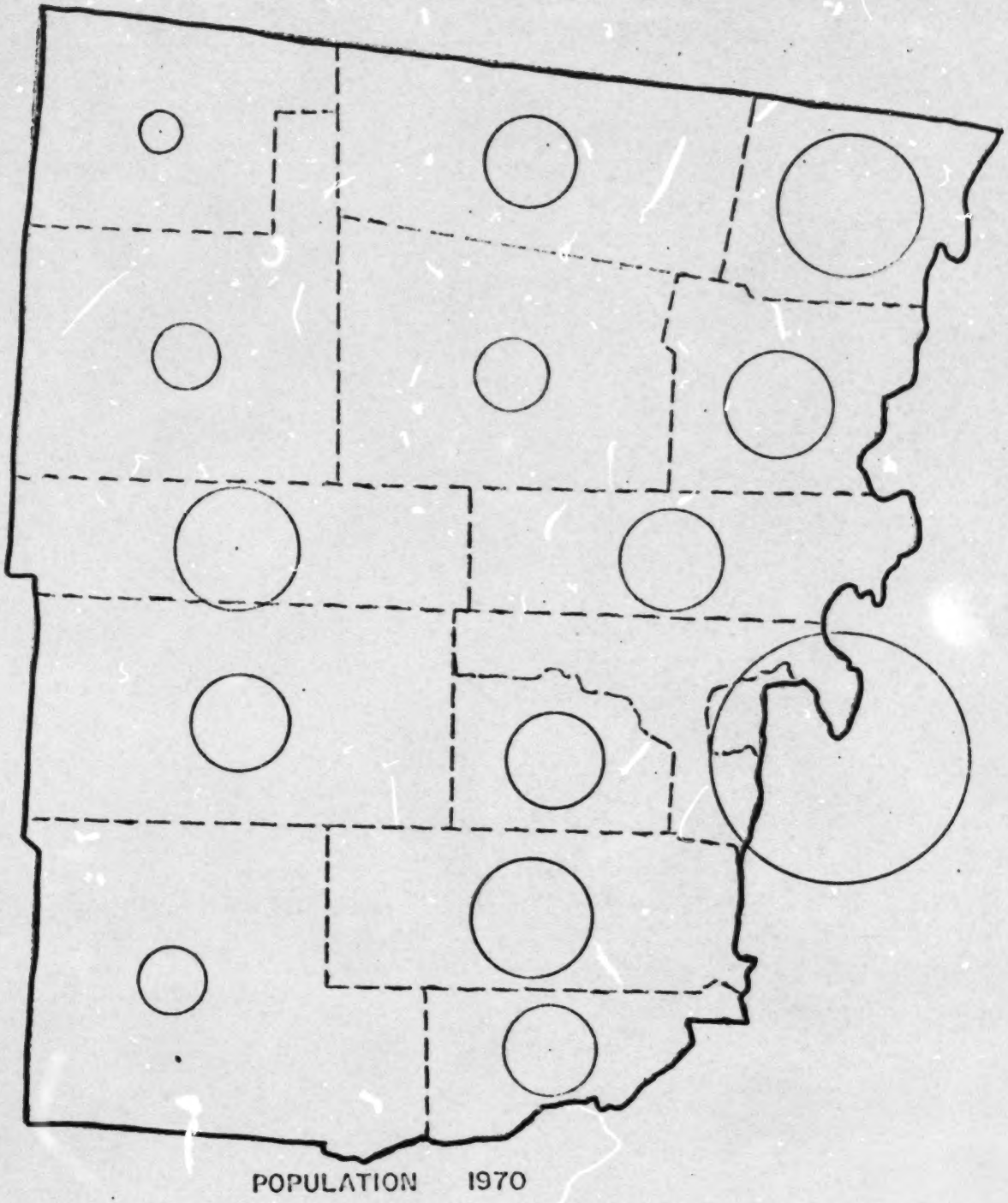

Figure 1. County map with proportionate population circles.

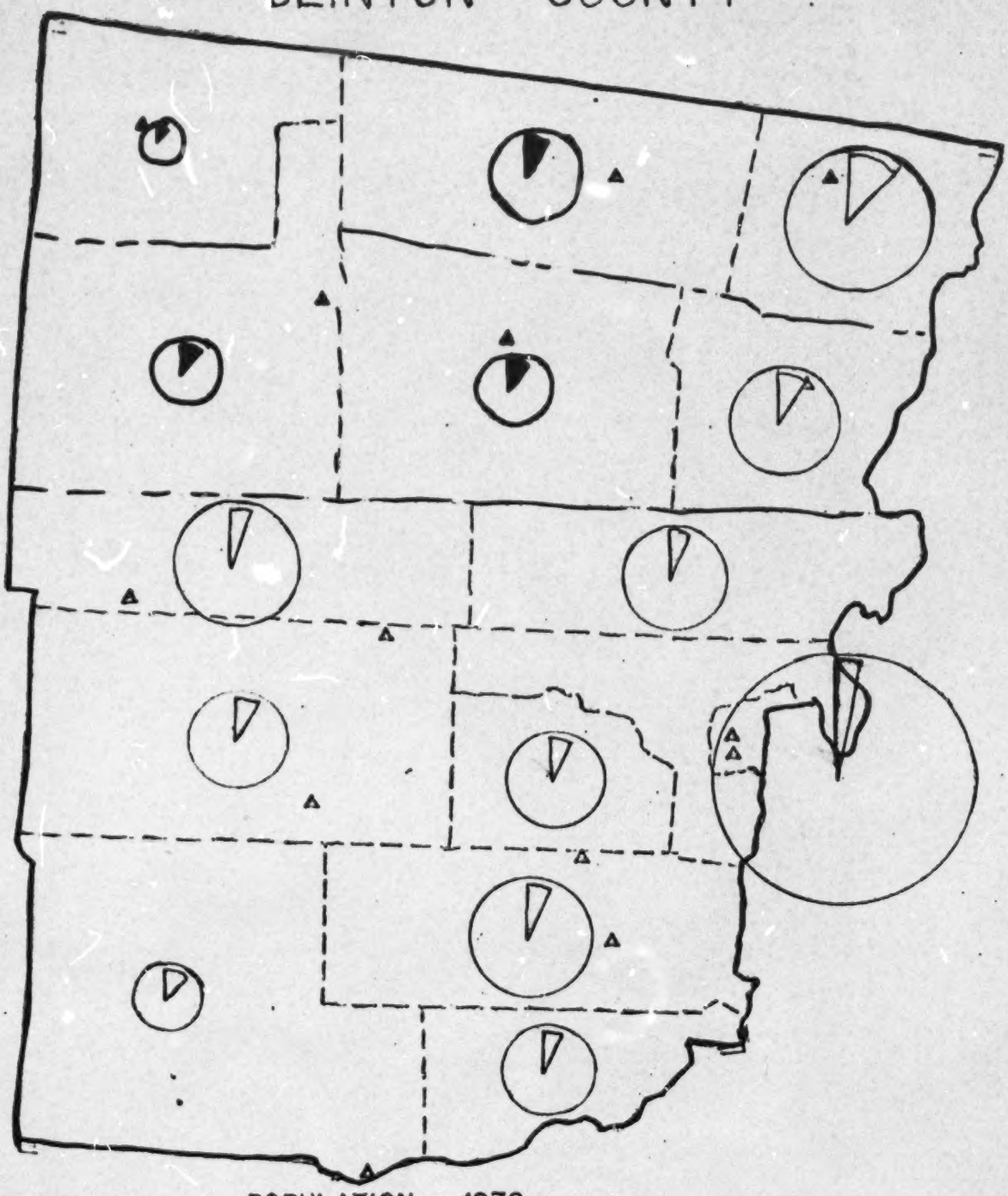

Figure 2. County map with proportion of population over 65 and senior citizen's clubs.

National Data

Another example of this overlay technique is to apply it to Quality of Life criteria already assembled for the United States.[1] Nine indexes of Quality of Life composed of at least eight measures were calculated for all of the states:

1. Individual Status
2. Irdividual Equality
3. Living Conditions
4. Agriculture
5. Technology
6. Economic Status
7. Education
8. Health and Welfare
9. State and Local Governments

The five highest and lowest states on each index were then mapped using a system of transparencies. The cumulative effect of each of the indexes and their geographic spread is thereby easily interpretable. The technique easily pin-points the Southern states as generally deficient and the Northwest and Northeast as having higher ratings.

Figures 3 and 4 illustrate how the overlay technique works.

In this case, such a presentation could be used in initial considerations for Federal funding of development projects or even for local presentations

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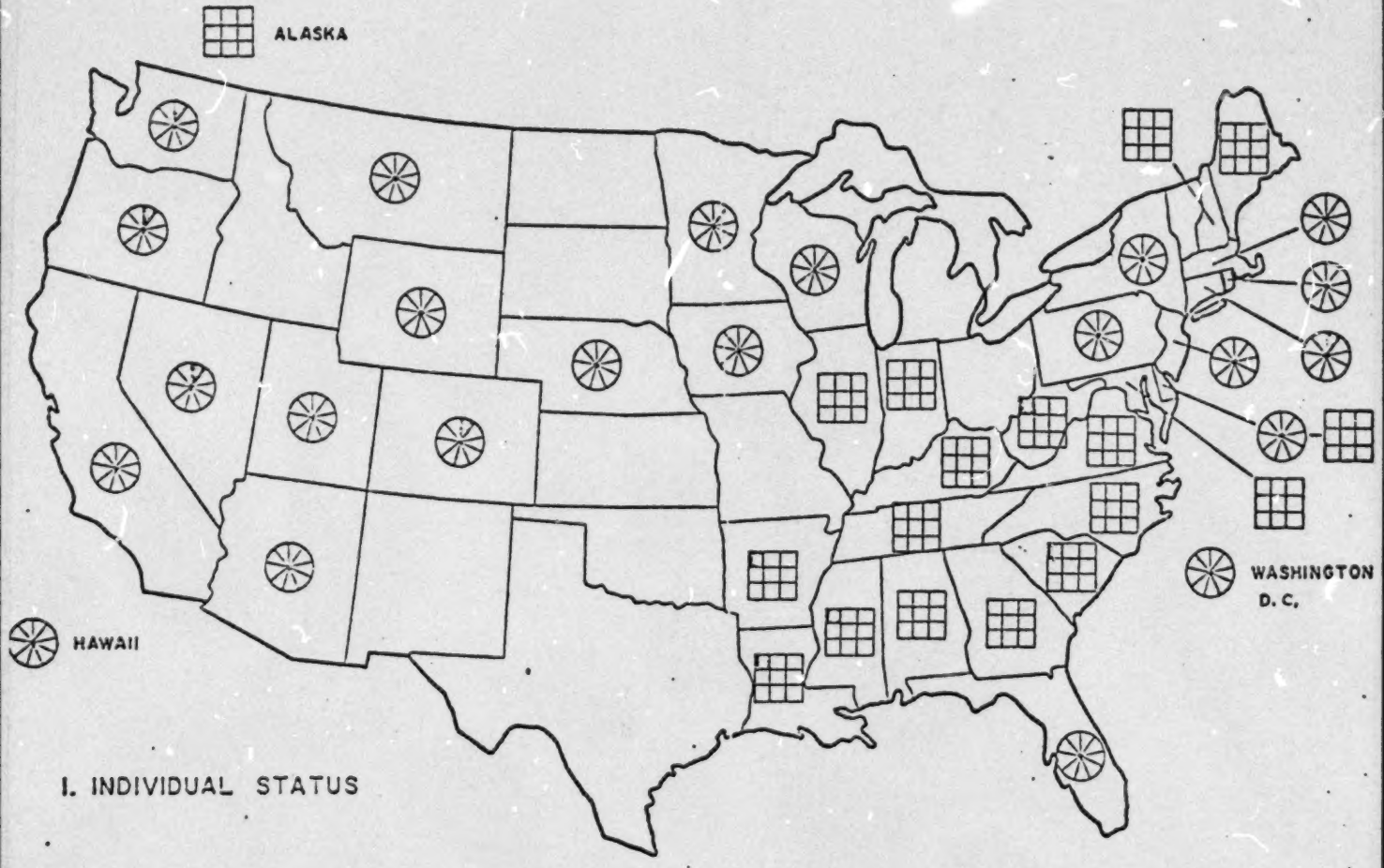
[1] The Quality of Life in the United States, 1970, Ben Chieh Liu, Kansas City: Midwest Research Institute, 1973.



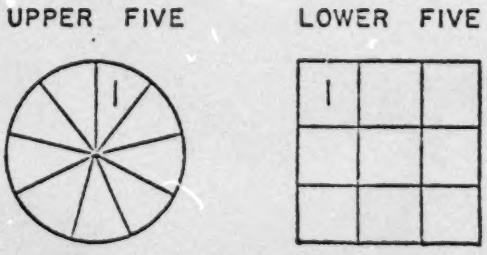
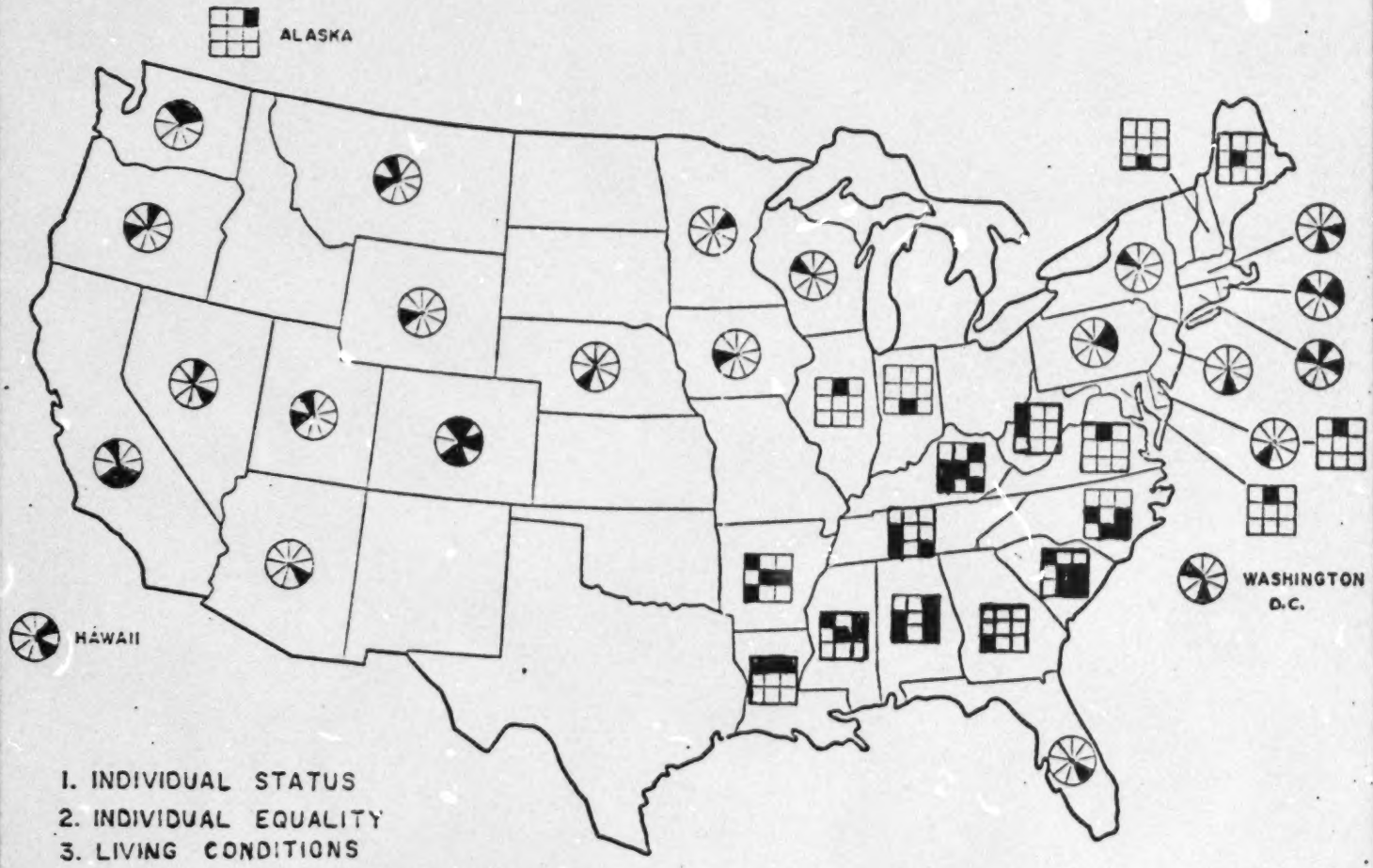
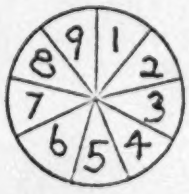


Figure 3. United States Quality of Life rating map with one index entered.



1. INDIVIDUAL STATUS
2. INDIVIDUAL EQUALITY
3. LIVING CONDITIONS
4. AGRICULTURE
5. TECHNOLOGY
6. ECONOMIC STATUS
7. EDUCATION
8. HEALTH AND WELFARE
9. STATE AND LOCAL GOVERNMENT

UPPER FIVE



LOWER FIVE

1	2	3
4	5	6
7	8	9

Figure 4. United States Quality of Life rating map with 9 indexes entered.

by Federal or Congressional personnel. In any case it illustrates how geographic mapping of Quality of Life variables can make data more interpretable and useful.

County Example

As part of a Federally funded Rural Development project in Clinton County, New York, the same overlay methodology was applied to solving problems of local access to services in a rural area. Four major phases of investigation were undertaken:

I. Census and Background Data
II. Crossroads Survey
III. Key Informant Survey
IV. General Sample Survey

Census/Background

The census and background resources that were included in the first phase of the study were:

Clinton County Map
Names of Towns
Adirondack Park Boundary
Population change 1950, 1960, 1970
Population 1970
Percent under 15
Percent over 65
Work Force
Percent unemployed
4-H Clubs
Baseball and Softball teams
Girl Scouts
Boy Scouts
Percent incomplete housing
Community Development Centers
Banks
Post Offices
Work Force
Percent employed in high status jobs
Percent employed in low status jobs
Percent unemployed
School districts
Library and bookmobile stops
Fire and ambulance districts
Telephone companies

Senior Citizens Clubs
Number of Families
Percent in poverty
Average Family Income
Median School years
Percent mobile homes
Percent overcrowed housing
Telephone toll charges
Registered voters
Percent Democrat
Percent Republican
Legislative districts
Regular Bingo Games

All data collected were summarized and entered onto overlay transparencies. This made possible the instant comparison of an unlimited combination of variables depending upon the problem or audience at hand.

Crossroads Survey

After secondary data sources were exhausted, the most economical of primary data collection methods - a windshield survey - was employed to inventory the actual location of various services in the county. One hundred seventeen different services were thus identified in fifty of the 81 crossroad communities surveyed.

Services and amenities were divided into two major categories for the inventory and anlysis:

1. Commercial Services such as:

    a. small grocery
    b. gas station
    c. bar
    d. hardware store
    e. barber
    f. recreation

2. Public and Professional Services such as:

   a. church
   b. post office
   c. public school
   d. doctor
   e. lawyer
   f. dentist
   g. clinic

Since one theory of community development holds that services are added to communities in the same sequence; for instance, gas stations are present before barber shops, the data were processed to see if, indeed, a cumulative pattern emerged. This implies that all communities in a given area have the same service priorities and relative intensities of demand. Of course, overlapping functions of some services and ease of access in adjacent areas may alter the pattern in specific localities. If a large enough area, a county, for example, is inventoried, however, an overall pattern should emerge. Through the use of a statistical technique called Guttman scaling, a pattern of commercial services was obtained (see figure 5). A similar scale was developed for public and professional services.

As an immediate tool for economic development, the Scales help to ascertain the services a community could most feasibly attempt to add to its array of services. In general, these most feasible services would be the absent items indicated by gaps in the

	Gen/Sm. Grocery	Gas Service	Car Repair	Dining	Bar	Liquor	Beauty Parlor	Lumber	Funeral Home	Insurance	Hobby	Hardware	Barber	Laundromat	Bank	Dept. Store	Construction	Pharmacy	Recreation	Large Grocery	Clothing	Plumbing & Heating	Radio-TV	Dry Cleaner	Variety	Copying	Western Union
Champlain	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Keeseville	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Rouses Point	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Peru	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Dannemora	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	O	X	O	X	X				
AuSable Forks	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X						
Chazy	X	X	X	X	X	X	X	X	O	X	X	X	X	X	X	O	X	X									
Ellenburg Depot	X	X	X	X	X	O	X	X	O	X	X	X	O	X	X	X											
Mooers	X	X	X	X	X	O	X	X	X	X	X	X	X	X													
Ellenburg Center	X	X	X	X	X	O	X	O	X																		
West Chazy	X	X	X	X	X	O	X	X																			
Cadyville	X	X	X	X	X	X	X	X																			
Beekmantown Corners	X	X	O	X	X	X																					
Merrill	X	X	X	X	X	X					X	X															
Moffitsville	X	O	O	X	X	X																					
Clintonville	X	O	X	X	X																						
Clayburg	X	O	X	X	X																						
Redford	X	O	X	O	X					X																	
Mooers Forks	X	X	X	X	X																						
Lyon Mountain	O	X	X	O	X					X				X													
So. Plattsburgh	X	O	X	X																							
Churubusco	X	X	X																								
W. Plattsburgh	X	X	X				X						X										X				
Pickett's Crs.	X	X	X										X														
Schuyler Falls	X	O	X																								
Sciota	X	O	X			X																					
Morrisonville	X	X				X	X							X													
Saranac	X	X			X		X																				
Forest	X	X																									
Altona	X							X	X	X										X							
Black Brook	X																										
Coopersville	X																										
Crowleys Crs.	X																										
Ellenburg Crs.	X			X		X																					
Harkness	X																										
Perry Mills	X							X																			
Port Kent	X																										
Riverview	X																										
Standish	X																										
Woods Mills	X																										
AuSable Chasm					X																						
Cannon Crs.																											
Champlain Park							X																				
Dwyers Crs.					X																						
Ingraham																	X										
Ledger Crs.					X																						

Figure 5

Guttman Scale of Commercial Services
in Clinton County

Coefficient of Scalability: .69

scale and/or the next item beyond the last service present in the community.

One caution to making instant recommendations is that in some communities local reasons may make the presence of some services innovations unnecessary. For instance, a local non-profit group might be showing movies; local conditions might rule out the profitable operation of a coin-operated laundry. It could also be that two localities are essentially a single community and consideration of their services separately is erroneous. Also, windshield surveys and secondary sources are not flawless means of compiling information.

The scales derived from the study should, therefore, be used as a guide or "tip-off" for local in-depth economic feasibility studies to be done on the indicated items, not as a 100% sure prediction of what services should be added.

Key Informant Survey

Although the crossroads windshield survey could provide the locations of services it could not give any indication of actual use of services and preferences or difficulties in obtaining services. In order to add this further diminsion to the project, a Key

Informant survey was devised to ask local persons where most people in the area went for certain services and what difficulties there might be in obtaining such services. Key informants were defined as those persons who came in contact with a large cross section of community residents; postmasters, general store owners, barbers, and drug store operators were among those interviewed in Clinton County.

Fifty-nine persons were interviewed in thirty communities about local residents' use of services and amenities in four categories; transportation, professional, medical, and commercial.

The results of the Key Informant survey were compiled in tables showing the number of households in a township, the percentage distribution of where the key informants said local residents went for a service, the mileage to that location, and an impact factor arrived at by multiplying the proportion of households going to a destination times the mileage to it. These impact factors thus provided a way of comparing the relative hardship a particular area experienced with regard to any of the services covered by the study.

In order to make the data more understandable as well as to make visual comparisons among services possible, a series of overlay maps were designed for all the services (see Figure 6).

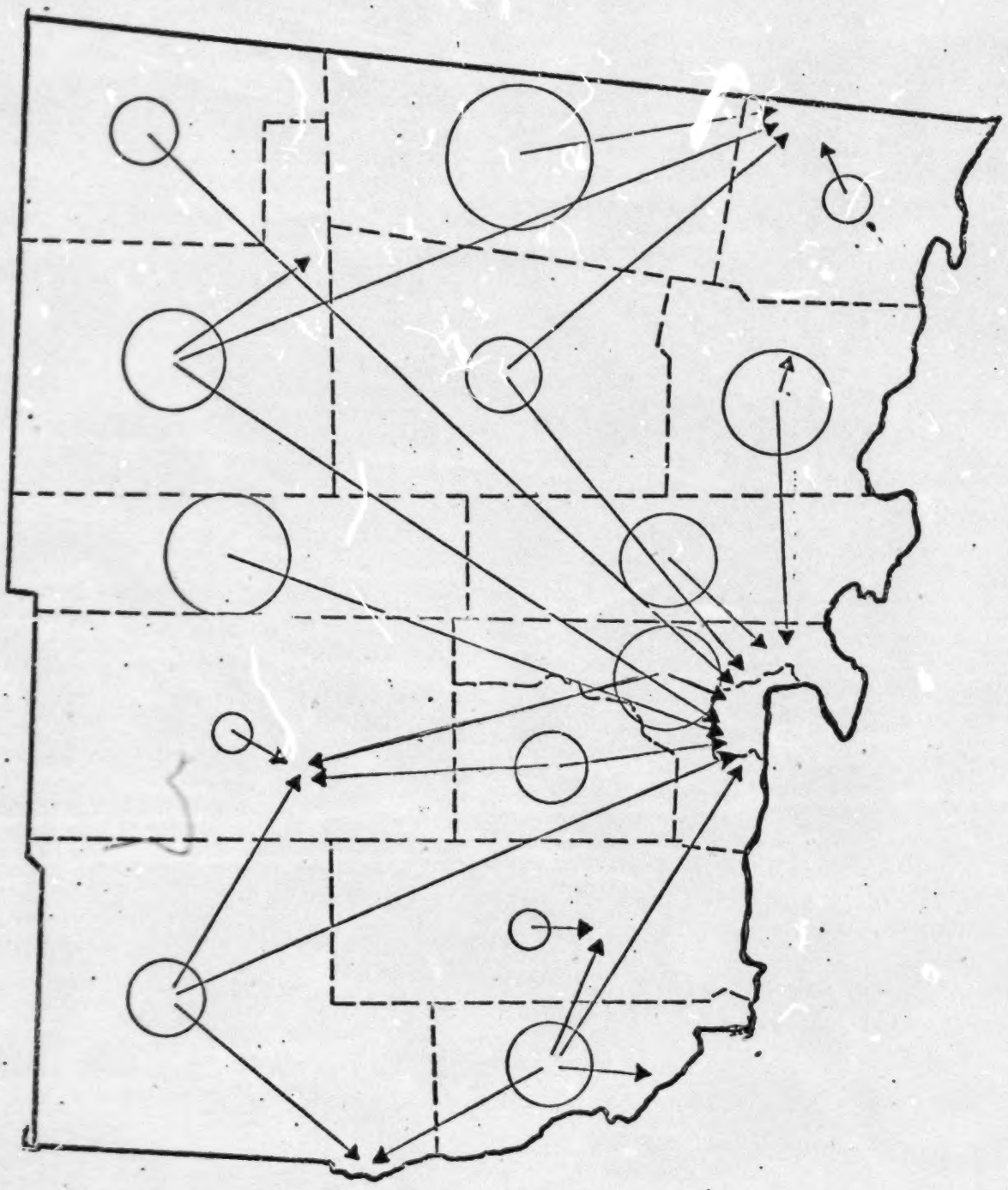


Figure 6. Access and impact map of Doctor's services in Clinton County.

Each arrow on the map shows where the key informants said that most residents went for a service and the relative size of the circles indicates the relative hardship that town's residents have in getting to a service.

The Key Informant survey proved to be an economical way of gathering a great deal of information about access to services in a rural county at relatively low cost. By presenting the data in an overlay system, the actual situation as well as potential siting of new outreach centers was facilitated.

One further piece of data was gathered from the key informants; where people from the community worked. This information was combined with census data on work trips and resulted in an arrow map of work locations which made possible the mapping of commuter route densities. With this kind of actual commuter pattern data is should be possible to set up a feasible rural transportation system (see Figures 7 and 8).

General Survey

While the key informant survey elicited a great deal of information about local residents' use of services there was still a question as to how closely this second-hand reporting reflected what people

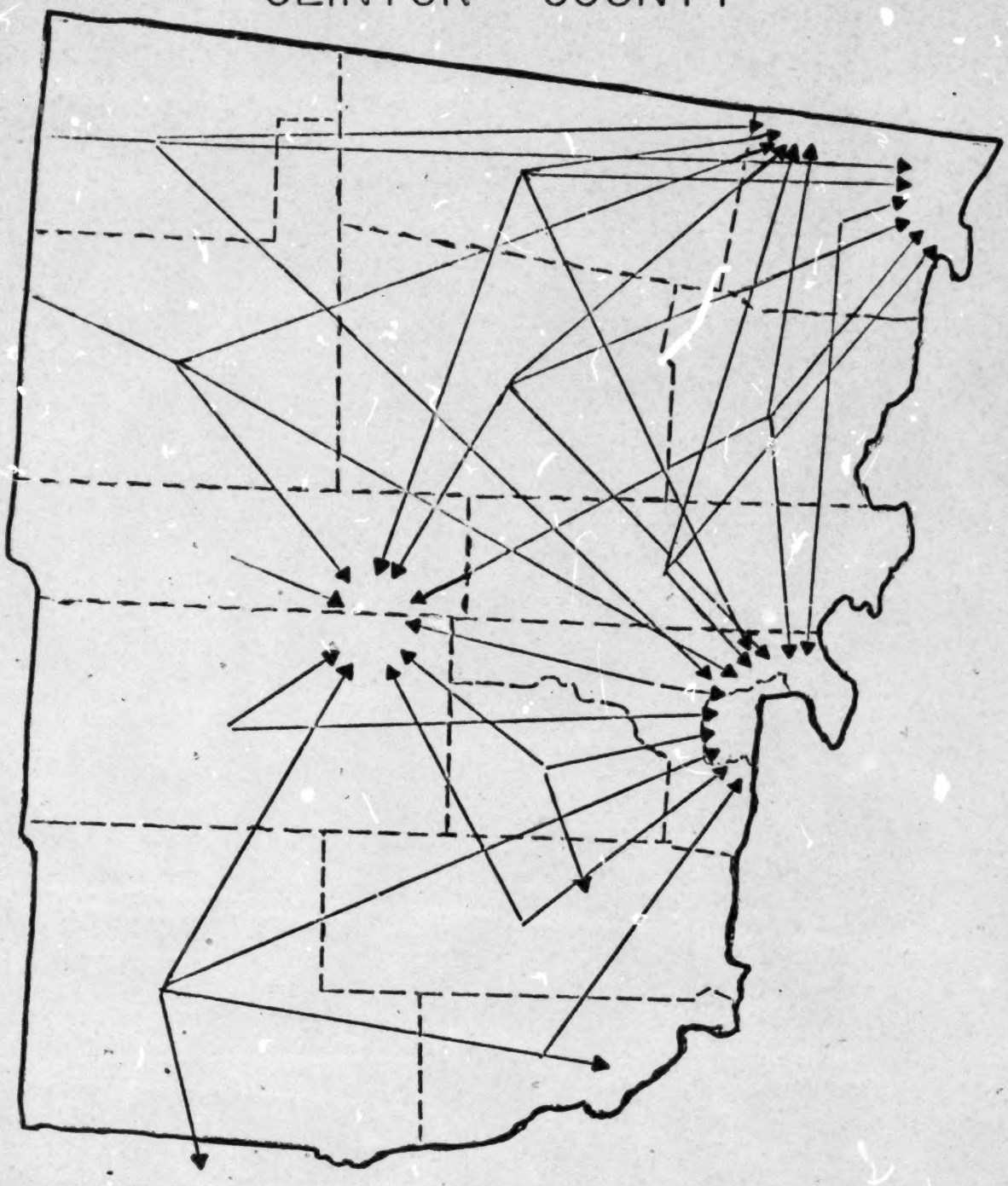


Figure 7. Arrow map of where town residents work

Figure 8. Commuter Route map shaded by traffic density

really did. To resolve this question, a general sample survey of the county was undertaken on the sampling frame of 8.5 percent or one out of each twelve households. The sample was drawn from town planning maps or actual drive-through counting of households so that it accurately reflected the geographic distribution of residents. Overall, 741 residents in the 14 townships were interviewed. The response rate varied from a low of 43% in one town to 84% in another for an overall count of 76%.

The correspondence between the Key Informant survey and the General Sample survey was remarkable; to the question, "What service does this area need most?" Table 1 documents this comparison.

Table 1

Correspondence between General Survey and Key Informant Survey for Most Needed Services

Service Need	General Survey % (741)	Key Informant % (59)
Doctor	31	30
Recreation	26	27
Sanitary facilities	9	8
Clinic/medical	8	8
Transport	6	5
Fire Department	2	2

In terms of where people went for services the correlation between the two services was high, but depended on which service was being investigated. For instance, where people went to buy gasoline had the worst correspondence, 43% and where they purchased drugs had the best, 86% agreement. In general, those services which were less of a commercial nature and more of a public service orientation were better evaluated by the key informants. Table 2 presents the full tabulation of discrepancies between the two surveys.

Table 2

Correspondence between Key Informant and General Surveys

Service	Percent Agreement between the two surveys
Drug Store	86
Insurance	79
Library	79
Bank	79
Hardware	79
Doctor	71
Clinic/out patient	71
Lawyer	71
Groceries	57
Gasoline	43

Summary

The experience of this research project has shown that a great deal of accurate information about access to services and service needs can be collected without resorting to a general sample survey. In times of restricted public monies for all kinds of public services, the methodologies described here make possible the allocation of services in an equitable fashion at low cost. An added feature is that by using the overlay/transparency technique more persons can participate in the decision-making process and the data used for such decisions can be better understood.

On the basis of this work described in this paper, the following recommendations for assessing service needs can be made:

1. Assemble all pertinent census and secondary data.
2. Map the data by geographic location.
3. Conduct a windshield survey to identify actual locations of services.
4. Select a number of key informants and interview them about where local residents go for services and what particular services are needed in the area.
5. Assemble all the data on overlay maps and present to local decision-makers.

If these steps are followed, the process of planning and providing access to services for rural residents will be efficient, equitable and understandable. Hopefully, such a model can help planning to be a more democratic process and will enable rural residents to enjoy many of those services which up to now have been lacking in their communities.